

Claims

1. A blend of at least two components K1 and K2, each component being based on at least one block copolymer C1 or C2 respectively,
 - 5 • the at least one block copolymer C1 of component K1 comprising at least the unit P(A1)-P(B1)-P(A1), comprising at least one polymer block P(B1) and at least two polymer blocks P(A1), where
 - P(A1) independently at each occurrence represents homopolymer or copolymer blocks of monomers A1, the polymer blocks P(A1) each having a softening temperature in the range from +20°C to +175°C,
 - P(B1) represents a homopolymer or copolymer block of monomers B1, the polymer block P(B1) having a softening temperature in the range from -130°C to +10°C,
 - the polymer blocks P(A1) and P(B1) are not homogeneously miscible with one another,
 - 10 • the at least one block copolymer C2 of component K2 comprising at least the unit P(B2)-P(A2)-P(B2), comprising at least two polymer blocks P(B2) and at least one polymer block P(A2), where
 - P(A2) represents a homopolymer or copolymer block of monomers A2, the polymer block P(A2) having a softening temperature in the range from +20°C to +175°C,
 - P(B2) independently at each occurrence represents homopolymer or copolymer blocks of monomers B2, the polymer blocks P(B2) each having a softening temperature in the range from -130°C to +10°C,
 - the polymer blocks P(A2) and P(B2) are not homogeneously miscible with one another,
 - 15 • and the blend forming an at least two-phase system.
2. The blend of claim 1, characterized in that the ratio V of the amount m_{K2} of component K2 used in the blend to the amount m_{K1} of component K1 used in the blend is up to 30 250 parts by weight of K2 per 100 parts by weight of K1, i.e., $V = m_{K2}/m_{K1} \leq 2.5$.

3. The blend of at least one of the preceding claims, characterized in that the blocks P(A1) are compatible with the blocks P(A2) and/or their respective corresponding polymers P'(A1) with P'(A2)
and/or the blocks P(B1) are compatible with the blocks P(B2) and/or their respective
5 corresponding polymers P'(B1) with P'(B2).
4. The pressure-sensitive adhesive of at least one of the preceding claims, characterized in that the polymer blocks P(A1) and the polymer blocks P(A2) and/or
10 the polymer blocks P(B1) and the polymer blocks P(B2) possess an identical homopolymer and/or copolymer composition.
5. The blend of at least one of the preceding claims, characterized in that the average chain length LB2 of the polymer blocks P(B2) of the block copolymer C2 does not exceed the average chain length LB1 of the polymer block P(B1) of the block
15 copolymer C1, advantageously LB2 being at least 10% smaller than LB1, very advantageously LB2 being at least 20% smaller than LB1.
6. The blend of at least one of the preceding claims, characterized in that the polymer blocks P(Ai) are present as a disperse phase ("domains") in a continuous matrix of
20 the polymer blocks P(Bi), preferably as spherical or distortedly spherical domains, this condition being obtained in particular by adjustment of the ratio V_{Li} of the average chain lengths LAi of the polymer blocks P(Ai) to the average chain lengths LBi of the polymer blocks P(Bi) of the block copolymers Ci, very preferably by adjustment of the ratio V_{L1} of the block copolymer C1.
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7. The blend of at least one of the preceding claims, characterized in that as block copolymer C2 star polymers of the type $[P(A2)-P(B2)]_nX$ are admixed,
 - where $n = 3$ to 12 and X is a polyfunctional branching unit, i.e., a chemical structural element via which the polymer arms $[P(A2)-P(B2)]$ are linked to one
30 another,
 - where the polymer blocks P(A2) independently at each occurrence represent homopolymer or copolymer blocks of the monomers A2, the polymer blocks P(A2) each having a softening temperature in the range from +20°C to +175°C,

- and where the polymer blocks P(B2) independently at each occurrence represent homopolymer or copolymer blocks of the monomers B2, the polymer blocks P(B2) each having a softening temperature in the range from -130°C to +10°C.

5 8. The blend of claim 7, characterized in that at least two of the n polymer arms [P(A2)-P(B2)] of the star polymers differ in their chain length and/or their chemical structure in that in particular n different polymer arms are present.

9. The pressure-sensitive adhesive of at least one of the preceding claims,
10 characterized in that at least one of the block copolymers C1 or C2 has a symmetrical structure such that there are polymer blocks P(Ai) identical in chain length and/or in chemical structure and/or there are polymer blocks P(Bi) identical in chain length and/or in chemical structure.

15 10. The blend of at least one of the preceding claims, characterized in that the block copolymer C1 exhibits at least one of the following criteria:

- a molar mass M_n of between 10 000 and 600 000 g/mol, preferably between 30 000 and 400 000 g/mol, with particular preference between 50 000 and 300 000 g/mol,
- a polydispersity $D = M_w/M_n$ of not more than 3,
- a polymer block P(A1) fraction of between 5 and 49% by weight, preferably between 7.5 and 35% by weight, in particular between 10 and 30% by weight, based on the composition of the block copolymer C1.

25 11. The blend of at least one of the preceding claims, characterized in that additionally

- at least one diblock copolymer C3 of the general formula P(A3)-P(B3) is added,
 - wherein the polymer blocks P(A3) independently of one another represent homopolymer or copolymer blocks of the monomers A3, the polymer blocks P(A) each having a softening temperature in the range from +20°C to +175°C,
 - and wherein the polymer blocks P(B3) independently of one another represent homopolymer or copolymer blocks of the monomers B3, the polymer blocks P(B3) each having a softening temperature in the range from -130°C to +10°C,
- and/or comprising at least one polymer P'(A4) and/or P'(B4),

- wherein the polymers P'(A4) represent homopolymers and/or copolymers of the monomers A4, the polymers P'(A4) each having a softening temperature in the range from +20°C to +175°C,
- wherein the polymers P'(B4) represent homopolymers and/or copolymers of the monomers B4, the polymers P'(B4) each having a softening temperature in the range from -130°C to +10°C,
- and wherein preferably the polymers P'(A4) are miscible with the polymer blocks P(A1), P(A2) and/or P(A3) and/or the polymers P'(A4) are miscible with the polymer blocks P(B1), P(B2) and/or P(B3).

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12. The pressure-sensitive adhesive of at least one of the preceding claims, characterized in that the diblock copolymer exhibits one or more of the following criteria:

- a molar mass M_n of between 5000 and 600 000 g/mol, preferably between 15 000 and 400 000 g/mol, with particular preference between 30 000 and 300 000 g/mol,
- a polydispersity $D = M_w/M_n$ of not more than 3,
- a polymer block P(A) fraction of between 3 and 50% by weight, preferably between 5 and 35% by weight, based on the diblock copolymer composition.

15 20 13. The blend of at least one of the preceding claims, characterized in that the monomers Bi are chosen from the following groups:

(1) acrylic and/or methacrylic acid derivatives of the general structure (VI)



where $\text{R}^1 = \text{H}$ or CH_3 and $\text{R}^2 = \text{H}$ or linear, branched or cyclic, saturated or unsaturated carbon chains having from 1 to 30, in particular from 4 to 18, carbon atoms,

(2) acrylic and/or methacrylic acid derivatives of the general structure (VI)



where $\text{R}^1 = \text{H}$ or CH_3 and $\text{R}^2 = \text{H}$ or linear, branched or cyclic, saturated or unsaturated carbon chains having from 1 to 30, in particular from 4 to 18, carbon atoms,

(3) vinyl compounds which preferably contain functional groups.

14. The blend of claim 15, characterized in that the polymer blocks P(Bi) represent a copolymer of from 75 to 100% by weight of monomers from group (1) and up to 25% by weight of monomers from group (2), the weight fractions adding up to 100.

5 15. The blend of at least one of the preceding claims, characterized by

- an admixture of tackifier resins, especially those compatible with the polymer blocks P(Bi), preferably at a weight fraction of up to 40% by weight, very preferably up to 30% by weight, based on the unadditived blend,
- and/or an admixture of plasticizers, fillers, nucleators, expandants, compounding agents and/or aging inhibitors.

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16. The pressure-sensitive adhesive of at least one of the preceding claims, characterized in that the pressure-sensitive adhesive is processed further from the melt, in that in particular it is applied to a backing.

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17. The use of a blend of at least one of the preceding claims as the basis for a pressure-sensitive adhesive, in particular for a pressure-sensitive adhesive for a pressure-sensitive adhesive tape, the pressure-sensitive adhesive being present as a single-sided or double-sided film on a backing.